CERTIFICATE OF MAILING

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to the: Assistant Commissioner for Patents, Washington, D.C. 20231.

Sara Carter	Sara Carter	June 21, 2004
Type or print name	Signature	Date

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF: **ZHANG ET AL.**

APPLICATION NO: **10/025,951**

FILED: **DECEMBER 19, 2001**

FOR: **HOLOGRAPHIC MULTI-FOCAL LENS**

EXAMINER: **Arnel C. Lavarias**

ART UNIT: **2872**

Assistant Commissioner for Patents
Alexandria, Virginia 23313-1450

REPLY AND AMENDMENT UNDER 37 C.F.R. § 1.11[*1*]

Sir:

In reply to the Office Action mailed 21 January 2004, Applicants respectfully request reconsideration of the outstanding rejections and reexamination of the present application in light of the following remarks and amendments.

Amendments to the Specification begin on page 2 of this paper.

Amendments to the Claims begin on page 5 of this paper.

Remarks begin on page 6 of this paper.

A **Replacement Drawing** is attached to this paper.

A corrected **Oath and Declaration** will be sent via separate correspondence.

SPECIFICATION AMENDMENTS

Please replace the section entitled ABSTRACT on page 34 with the following amended paragraph:

ABSTRACT

~~The invention provides a~~ A multifocal optical lens having a holographic optical element that selectively redirects light to provide the wearer with a single image formed from a single focal power. The invention also provides a method for producing a multifocal optical lens having a holographic optical element.

Please add the following section and paragraph immediately before the first paragraph on page 1:

The present application is related to and claims, under 35 U.S.C. § 120, the benefit of International Application No. PCT/EP 01/15352, filed 28 December 2001, which claims priority to U.S. Provisional Application No. 60/258,923, filed 29 December 2000, which are expressly incorporated fully herein by reference.

Please replace the paragraph on page 13, starting on line 20, with the following paragraph:

FIG. 6 also illustrates the situation where a wearer of the bifocal lens **34** is viewing a distant object. Light from a distant object **20** strikes the first reflection HOE **36** at an angle that does not activate the first reflection HOE ~~38~~ 36. In other words, the light from the distant object **20** forms an incident angle that is outside the activation angle of the first reflection HOE **36**. The light from the distant object **20** passes through the first reflection HOE **36** and is focused in accordance with the first focusing element **16**, in combination with the optical power of the crystalline lens of the eye (which is not shown), to a focal point **24** on the retina of the eye, more specifically on the fovea. However, the second reflection HOE **38** is programmed with a volume grating structure having an activation angle that reflects light having the incident angle exhibited by the light from the distant object **20**. Therefore, the second reflection HOE **38** reflects the incoming light, preventing it from entering the eye.

Please replace the paragraph on page 14, starting on line 1, with the following paragraph:

FIG. 6 (a) illustrates the situation where a wearer is viewing a near object. Light from the near object **22** strikes the second reflection HOE **38** at an angle that does not activate the second reflection HOE **38**. In other words, the light from the near object **22** forms an incident angle that is outside the activation angle of the second reflection HOE **38**. The light from the near object **22** passes through the second reflection HOE **38** and is focused in accordance with the second focusing element **18**, in combination with the optical power of the crystalline lens of the eye (which is not shown), to a focal point **24** on the retina of the eye, more specifically on the fovea. However, the first reflection HOE **36** is programmed with a volume grating structure having an activation angle that reflects light having the incident angle exhibited by the light from the near object **22**. Therefore, the first reflection HOE ~~30~~ 36 reflects the incoming light, preventing it from entering the eye.

Please replace the paragraph on page 18, starting on line 1, with the following paragraph:

Another group of HOEs suitable for the present invention can be produced from conventional volume holographic optical element recording media. As with the above-described polymerizable materials for HOEs, object light and collimated reference light are simultaneously projected onto an HOE recording medium such that the electromagnetic waves of the object and reference light ~~from~~ form interference fringe patterns. The interference fringe patterns, *i.e.*, volume grating structure, are recorded in the HOE medium. When the HOE recording medium is fully exposed, the recorded HOE medium is developed in accordance with a known HOE developing method. Suitable volume holographic optical element recording media include commercially available holographic photography recording materials or plates, such as dichromatic gelatins. Holographic photography recording materials are available from various manufacturers, including Polaroid Corp. When photographic recording materials are used as the HOE, however, toxicological effects of the materials on the ocular environment must be considered. Accordingly, when a conventional photographic HOE material is used, it is preferred that the HOE is encapsulated in a biocompatible optical material. FIG. 7. Useful biocompatible optical materials for encapsulating the HOE include optical materials that are suitable for the first focusing element of the present lens.

Please replace the paragraph on page 23, starting on line 19, with the following paragraph

As mentioned previously, the invention may be utilized in the embodiment of an intraocular lens. In this embodiment the HOE of the lens is formed according to the methods described above. The primary difference between this embodiment and the previously discussed embodiments is that this lens is designed to be inserted into the eye. Such lenses, methods of manufacturing such lenses, and methods of inserting such lenses are generally known to those skilled in the art. These lenses and methods of manufacture are described in several publications such as U.S. Patent 5,776,192 to McDonald; U.S. Patent 5,044,743 to Ting; U.S. Patent ~~4,595,070~~ 4,959,070 to McDonald; and U.S. Patent 4,769,035 to Kelman, all of which are incorporated herein by reference.

CLAIM AMENDMENTS

Please amend claim 1 as follows:

1. (currently amended) An optical lens comprising at least one holographic optical element and at least one focusing element, said holographic optical element characterized by an interference fringe pattern having a finite ray acceptance angle range that diffracts up to 100% of incoming light when the Bragg condition is met, said holographic optical element further characterized as possessing substantially neutral focusing power, wherein said optical lens is a multifocal lens.

2. (previously presented) An optical lens according to claim 1 wherein said optical lens is biocompatiable.

3. (previously presented) An optical lens according to claim 1 wherein said optical lens is a contact lens.

4. (previously presented) An optical lens according to claim 1 wherein said optical lens is a spectacle lens.

5. (previously presented) An optical lens according to claim 1 wherein said optical lens is an intraocular lens.

6. (previously presented) An optical lens according to claim 1 wherein said holographic optical lens element is a transmission volume holographic optical lens element.

7. (previously presented) An optical lens according to claim 1 wherein said holographic optical lens element is a reflective holographic optical lens element.

REMARKS

In response to the Office Action dated 21 January 2004, Applicants request reconsideration and withdrawal of the rejections set forth in the Office Action in view of the above amendments and the following remarks.

The applicants have submitted a new signed oath and declaration as requested. Applicants have also amended the specification and drawings in accordance with the Examiner's request. With regard to the drawings, reference numeral 7 has been added to Figure 1, as is shown on the Replacement Sheet attached.

Claims 1-6 were rejected under 35 U.S.C. §103 (a) as being "unpatentable over Israel (U.S. Patent No. 6139145) in view of Zhang et al. (U.S. Patent No. 5997140.)" To properly maintain a rejection under 35 U.S.C. §103, the prior art must have suggested to those of ordinary skill in the art that they should make the claimed composition or device or carry out the claimed process, with a reasonable expectation of success. Both the suggestion and the reasonable expectation of success must be adequately founded in the prior art and not in the applicant's disclosure. *See In re Vaeck*, 20 USPQ2d 1438, 1442 (Fed. Cir. 1991). Moreover, "[t]he references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention..." M.P.E.P. §2141.

Israel is unacceptable as a primary reference because it does not teach or suggest an ophthalmic lens that comprises a holographic optical element that allows a wearer to switch between multiple optical powers. Israel is directed to "a method of correcting vision defects associated with central field loss." '145 Abstract. The claimed invention relates to "an ophthalmic lens that comprises a holographic optical element that allows a wearer to switch between multiple optical powers" and a "method for making a multifocal lens" US Application No. 10/025,951, page 1, lines 2-5. Applicants have amended claim 1 to include the limitation that the optical lens be a multifocal lens.

Additionally, Israel teaches away from focus on the fovea and multifocal lenses:

> Although both images are formed on the fovea, the brightness of the image in each case is reduced by about 50%, or the ratio of the light intensity assigned to each image. In certain cases, such a lens can be used to treat macular degeneration by providing sufficient image magnification so as to project the image over a retinal area more than

> that damaged by macular degeneration. Such an approach, however, does not shift the image to healthy portions of the retina.
> Similar multifocal intraocular lenses incorporating two refractive zones also have been disclosed. For example, the use of a pair of bifocal intraocular lenses has been disclosed in which each of the pair of bifocal intraocular lenses incorporates a refractive element and a diffractive element. One of the lenses provides greater image intensity for the image of near objects, while the other lens provides greater image intensity for the image of distant objects. This approach has the advantage that the incident light can be apportioned or split between the two images in a continuous manner between the two lenses. The disadvantage is that the image is processed by two optical elements, each of which introduces its own aberrations and loss of image contrast so that the performance of the compound lens can be worse than either a diffractive or refractive lens.

'125 patent, column 1 line 56- col. 2, line 12.

The invention described in Israel seeks to shift images to healthy portions of the macula, other than the fovea. The present invention, however, operates in a different manner. As disclosed on page 3 of the present application, the present invention includes a "multifocal optical lens that allows a user to actively select between at least 2 focusing powers, yet does not require multiple layers of holograms." Id., lines 20-21. ..."[T]he lens of the present invention uses only one optical power at a time to form a clearly perceivable image along the wearer's line of sight, more specifically at the fovea." Id. at page 12, lines 18-21 (emphasis added).

As such, Israel is unacceptable as a primary reference because it does not teach or suggest an ophthalmic lens that comprises a holographic optical element that allows a wearer to switch between multiple optical powers. Applicants respectfully submit that with the above amendment for claim 1, the 103(a) rejection has been overcome and claims 1-3 are in condition for allowance. Applicants respectfully request reconsideration.

Should the Examiner believe that a discussion with Applicants' representative would further the prosecution of this application, the Examiner is respectfully invited to contact the undersigned. Please address all correspondence to Karen Borrelli, CIBA Vision, Patent Department, 11460 Johns Creek Parkway, Duluth, GA 30097. The Commissioner is hereby authorized to charge any other fees which may be required under 37 C.F.R. §§1.16 and 1.17, or credit any overpayment, to Deposit Account No. 50-2965.

Respectfully submitted,

Karen A. Borrelli
Reg. No. 52,638
(678) 415-3690

Date: 21 June 2004

CIBA Vision
Patent Department
11460 Johns Creek Parkway
Duluth, GA 30097

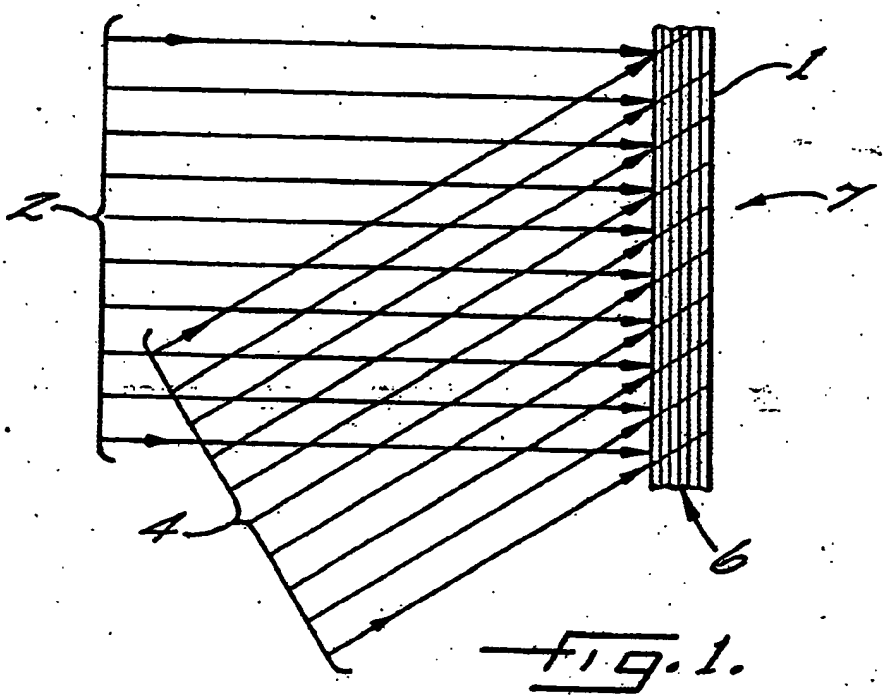

Fig. 1.

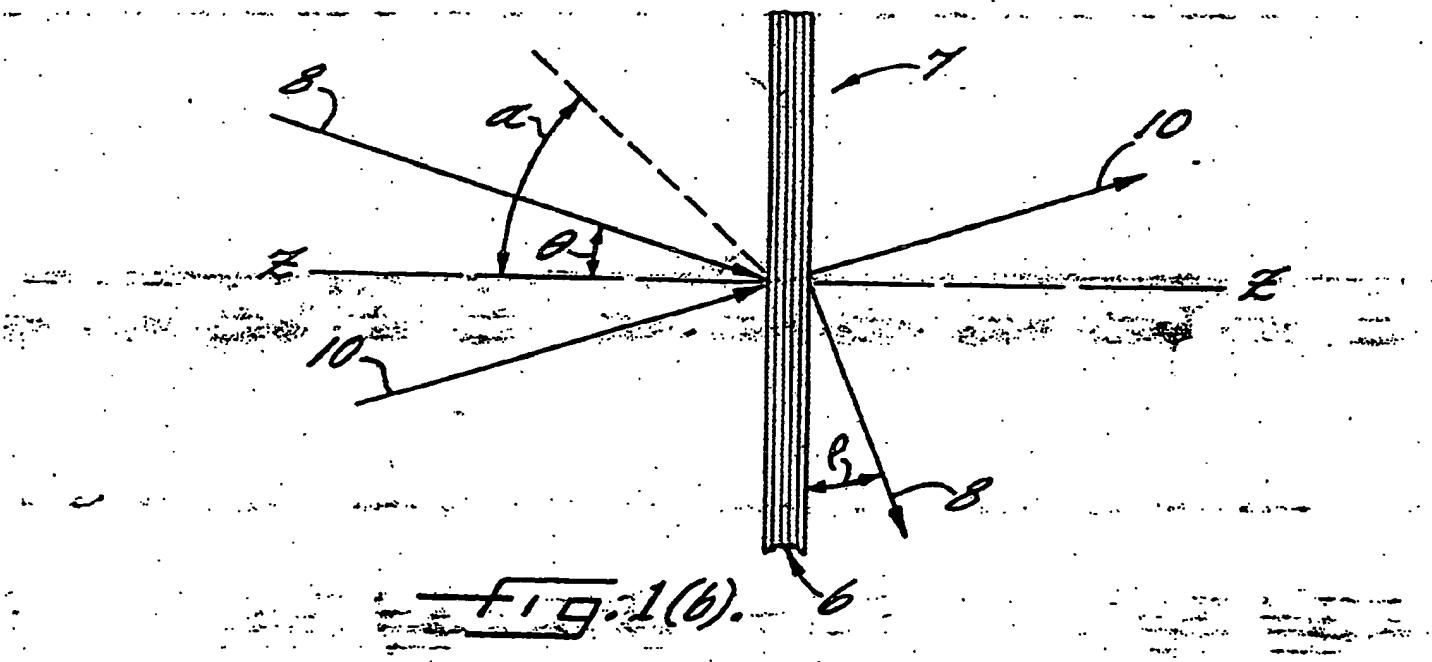

Fig. 1(b).

CASE CL/V-31599A

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Sara Carter	Sara Carter	June 21, 2004
Type or print name	Signature	Date

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF
ZHANG ET AL.
APPLICATION NO: 10/258,923
FILED: DECEMBER 19, 2001
FOR: HOLOGRAPHIC MULTIFOCAL LENS

Art Unit: 2872
Examiner: Lavarias, Arnel C.

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

PETITION FOR EXTENSION OF TIME

Sir:

The Office Action of January 21, 2004 has a shortened statutory time set to expire on April 21, 2004. A two-month extension is hereby requested pursuant to 37 CFR §1.136(a).

Please charge Deposit Account No. 50-2965 in the name of Ciba Vision in the amount of $420 for payment of the extension fee. An additional copy of this paper is here enclosed. The Commissioner is hereby authorized to charge any additional fees under 37 CFR §1.17 which may be required, or credit any overpayment, to Account No. 50-2965 in the name of Ciba Vision.

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01 FC:1252 420.00 DA

Respectfully submitted,

CIBA Vision Corporation
Patent Department
11460 Johns Creek Parkway
Duluth, GA 30097-1556

Date: June 21, 2004

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